

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (Original) An apparatus for helping to protect a vehicle occupant, comprising:
 an actuatable vehicle occupant protection device;
and
 a microelectromechanical system device (MEMS device) energizable to cause actuation of said protection device.

Claims 2-14 (Cancelled)

Claim 15 (Original) An apparatus comprising:
 an actuatable vehicle occupant protection device;
 at least one multi-layered device including:
 an outer layer having a plurality of individually rupturable segments;
 a middle layer having a plurality of individual chambers associated in a one-to-one relationship with said rupturable segments of said outer layer and being closed by said rupturable segments, each one of said chambers having contents heatable to increase the pressure in said chamber;
and
 a base layer having a plurality of individually energizable electric heating elements associated in a one-to-

one relationship with said chambers for, when energized, heating the contents of said chambers;

each one of said rupturable segments being rupturable due to an increase in pressure in its associated chamber to enable flow of fluid out of said chamber; and

means for selectively energizing said individually energizable electric heating elements.

Claim 16 (Original) An apparatus as set forth in claim 15 wherein said heatable contents comprises a pyrotechnic material which is ignitable to produce fluid under pressure.

Claim 17 (Withdrawn) An apparatus as set forth in claim 15 wherein said heatable contents comprises a fluid under pressure which is heatable to increase its pressure.

Claim 18 (Original) An apparatus as set forth in claim 15 wherein said electric heating elements are micro-resistors.

Claim 19 (Original) An apparatus as set forth in claim 15 wherein said protection device is an air bag.

Claim 20 (Withdrawn) An apparatus as set forth in claim 15 wherein said multi-layered device is an initiator for a fluid-generating apparatus.

Claim 21 (Original) An apparatus as set forth in claim 15 wherein said multi-layered device is energizable to generate a primary fluid for actuating said protection device.

Claim 22 (Withdrawn) An apparatus as set forth in claim 15 wherein said electric heating elements are reactive bridges.

Claims 23-26 (Cancelled)

Claim 27 (Previously presented) An apparatus comprising:

- an actuatable vehicle occupant protection device;
- an array of individually energizable devices for producing one of inflation fluid and combustion products for actuating said protection device; and
- means for energizing selected ones of said array of individually energizable devices,
 - said means for energizing comprising a base that extends across said array and that includes a plurality of electric heating elements associated one with each of said energizable devices,
 - said means for energizing further comprising control means for directing electric current into selected ones of said plurality of electric heating elements to energize said selected ones of said energizable devices.

Claim 28 (Cancelled)

Claim 29 (Original) An apparatus as set forth in claim 27 wherein said heating elements are micro-resistors.

Claim 30 (Original) An apparatus as set forth in claim 27 wherein said individually energizable devices are pyrotechnic devices ignitable to produce inflation fluid under pressure.

Claim 31 (Withdrawn) An apparatus as set forth in claim 27 wherein said individually energizable devices are fluid devices energizable to produce inflation fluid under pressure.

Claim 32 (Withdrawn) An apparatus as set forth in claim 27 wherein said electric heating elements are reactive bridges.

Claim 33-39 (Cancelled)

Claim 40 (Previously presented) An apparatus for helping to protect a vehicle occupant, comprising:

an actuatable vehicle occupant protection device;

and

a microelectromechanical system device (MEMS device) energizable to cause actuation of said protection device,

wherein said MEMS device includes a substrate on which is formed a plurality of electric heating elements, the

electric heating elements being energizable to cause actuation of said protection device.

Claim 41 (Previously presented) An apparatus as set forth in claim 40 wherein each of said plurality of electric heating elements has an associated pyrotechnic charge, said plurality of electric heating elements being selectively energizable, energizing of an electric heating element igniting said associated pyrotechnic charge.

Claim 42 (Cancelled)

Claim 43 (Previously presented) An apparatus as set forth in claim 1 wherein the microelectromechanical system device (MEMS device) has a length of approximately one half of an inch and a width of approximately one half of an inch.

Claim 44 (Previously presented) An apparatus as set forth in claim 1 wherein the microelectromechanical system device (MEMS device) includes a plurality of plenums for storing an energizable fluid source, each of the plurality of plenums having a depth of up to ten millimeters.

Claim 45 (Previously presented) An apparatus as set forth in claim 44 wherein each of the plurality of plenums is cylindrical and has a diameter of up to 1.4 millimeters.

Claim 46 (Currently amended) An apparatus as set forth in claim 1 wherein said MEMS device forms a first portion of an inflator for actuating said protection device, said MEMS device of said first portion including a plurality of plenums for storing energizable fluid sources, a second portion of said inflator comprising a plurality of ~~microelectromechanical system devices~~ (MEMS devices), each one of the plurality of ~~microelectromechanical system device~~ (MEMS device) MEMS devices of said second portion of said inflator also including a plurality of plenums for storing an energizable fluid ~~source~~ sources.

Claim 47 (New) An apparatus for helping to protect a vehicle occupant, said apparatus comprising:

- an actuatable vehicle occupant protection device;
- an inflator that includes a plurality of microelectromechanical system devices (MEMS devices) that are energizable to cause actuation of said protection device; and
- vehicle electric circuitry located remote from said inflator and operatively connected to said plurality of MEMS devices of said inflator, said vehicle electric circuitry being responsive to received sensory inputs for controlling energization of said plurality of MEMS devices.

Claim 48 (New) An apparatus as set forth in claim 47 wherein said inflator further includes a housing, said plurality of MEMS devices including means for mounting to said housing, said vehicle electric circuitry being operatively

connected to said plurality of MEMS devices through said means for mounting to said housing.

Claim 49 (New) An apparatus as set forth in claim 48 wherein lead wires extend between said housing and said vehicle electric circuitry for operatively connecting said MEMS devices to said vehicle electric circuitry.

Claim 50 (New) An apparatus as set forth in claim 47 wherein each MEMS device of said plurality of MEMS devices includes a base having electric circuitry that is operatively connected to said vehicle electric circuitry and that is energized by said vehicle electric circuitry for actuating said MEMS device.

Claim 51 (New) An apparatus for helping to protect a vehicle occupant, said apparatus comprising:

an actuatable vehicle occupant protection device;

and

a microelectromechanical system device (MEMS device) energizable to cause actuation of said protection device, said MEMS device being a multi-layered structure having abutting first and second layers, said first layer housing a plurality of energizable fluid sources and said second layer having electric circuitry for actuating said plurality of energizable fluid sources, each one of said plurality of energizable fluid sources being in contact with said electric circuitry of said second layer.

Claim 52 (New) An apparatus as set forth in claim 51 wherein said first layer includes a block of material in which a plurality of plenums are located, each energizable fluid source of said plurality of energizable fluid sources having an associated plenum of said plurality of plenums and being housed in said associated plenum.

Claim 53 (New) An apparatus as set forth in claim 51 further including remotely located vehicle electric circuitry that is operatively connected to said electric circuitry of said second layer controlling actuation of said plurality of energizable fluid sources.

Claim 54 (New) An apparatus as set forth in claim 51 further including a third layer that abuts the first layer on a side opposite the second layer and that covers said plurality of energizable fluid sources, portions of said third layer being rupturable upon actuation of said plurality of energizable fluid sources.

Claim 55 (New) An apparatus as set forth in claim 54 wherein the first, second, and third layers of the multi-layered structure are bonded together using an adhesive.

Claim 56 (New) An apparatus for helping to protect a vehicle occupant, said apparatus comprising:

an actuatable vehicle occupant protection device;

and

a microelectromechanical system device (MEMS device) energizable to cause actuation of said protection device, said MEMS device being a multi-layered structure including a first layer having a plurality of fluid sources and a second layer having means for actuating said plurality of fluid sources, said first and second layers being bonded together.

Claim 57 (New) An apparatus as set forth in claim 56 wherein said first and second layers are bonded together using an adhesive.

Claim 58 (New) An apparatus as set forth in claim 56 wherein said first layer includes a first surface and said second layer includes a second surface, said first and second surfaces being bonded together, said first and second surfaces having outer dimensions that are approximately equal in size.

Claim 59 (New) An apparatus as set forth in claim 56 further including a third layer for covering said plurality of fluid sources, said third layer being bonded to said first layer on a side opposite said second layer.

Claim 60 (New) An apparatus as set forth in claim 59 wherein said first and third layers are bonded together using an adhesive.

Claim 61 (New) An apparatus as set forth in claim 59 wherein said first layer includes a first surface and said

second layer includes a second surface, said first and second surfaces being bonded together, said first and second surfaces having outer dimensions that are approximately equal in size.

Claim 62 (New) An apparatus as set forth in claim 56 wherein said means for actuating said plurality of fluid sources of said second layer includes an electric circuit that is operatively coupled to remotely located vehicle electric circuitry which controls actuation of said plurality of fluid sources.

Claim 63 (New) An apparatus for helping to protect a vehicle occupant, said apparatus comprising:

an actuatable vehicle occupant protection device;

and

a microelectromechanical system device (MEMS device) energizable to cause actuation of said protection device, said MEMS device including a base portion, an electric circuit formed on a first surface of said base portion and terminal pins extending from said electric circuit and outwardly of a second surface of said base portion, said second surface of said base portion being opposite said first surface.

Claim 64 (New) An apparatus as set forth in claim 63 further including an inflator housing into which said terminal pins are received for operatively coupling said electric circuit of said base portion of said MEMS device to remotely located vehicle electric circuitry, lead wires operatively

connecting said vehicle electric circuitry to said terminal pins when said terminal pins are received in said inflator housing.

Claim 65 (New) An apparatus as set forth in claim 64 wherein said MEMS device further includes a plurality of actuatable fluid sources, said vehicle electric circuitry controlling energization of said electric circuitry of said base portion of said MEMS device for actuating said plurality of actuatable fluid sources.

Claim 66 (New) An apparatus as set forth in claim 65 wherein each of said plurality of actuatable fluid sources is individually actuatable, said vehicle electric circuitry being adapted to control which ones of said plurality of actuatable fluid sources are actuated by said electric circuit of said base portion of said MEMS device.